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Gamification in education – utilization in teaching of languages

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Abstract of bachelor's thesis

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Abstract

This paper focuses on how language teachers in Finland reacts and uses gamified learning applications. Motivation for the study, apart from the personal interest, is the on-going digitalization process of Finnish schools. My original research questions included: 1) what are the benefits of gamification in teaching? 2) how different applications and platforms are utilizing gamification elements? 3) are teachers using these applications and platforms to their benefit? For this study, I have reviewed different learning theories such as Skinner's Operant-Conditioning-theory of behaviorism, Chomsky's Universal Grammar and Felder and Silverman's Felder-Silverman-model. I familiarized myself with the concept of gamification and also tried out plethora of different learning applications and platforms in order to assess what gamification elements are used and how they are showing. Most common gamification elements are progress bar which shows users progression towards different goals, different forms of points or virtual currency that can be used to purchase new features, personalization items and special classes and badges which shows your achievements. In order to find out the teacher's attitudes and experiences I conducted a survey which was sent out to language teachers. The survey divided the respondents into two groups, adopters and non-adopters, based on if they have utilized some of applications mentioned in the survey. According to the survey, the concept of gamification is not familiar to all of the teachers but majority of them have or are using gamified applications and feel that they are a good supplement to their teaching. Major benefits include instant feedback, competing with peers in the class and multisensory experience. Gamified applications also seemed to make learning more fun while not completely fixing some of the motivational issues amongst students. Most used applications were Quizlet, Duolingo and Kahoot. Research also identifies some required improvements in order to achieve more benefits from gamification and other digital tools, such as more training for the teachers in order to strengthen their competence and clear vision and strategy to generate positive culture attitude in schools towards gamified applications and digitalization.

Keywords gamification, digitalization, teaching, language teaching, learning

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1 Introduction

Digitalization has been making its way into education for quite a while now and even thought the number of different digital tools and platforms has varied quite a bit during the last few years, the trend is going upwards. Educational technologies, such as gamified applications, virtual classrooms and new operational models in classroom, have been making their way into public discussion, the latest example have been because of the digitalization of matriculation exams. Government has also ordered a report on for Comprehensive Schools in the Digital Age, and its latest interim report was published November 2017 (Kaarakainen *et al.*, 2017).

One thing to consider is what are the benefits digitalization of school. Is there evidence that it produces better results? Is it cheaper? Does it make the teacher's jobs easier? Seemingly, there are real benefits with, for example, digitalized learning materials. Our education system is full of people, who have read textbooks during their education careers that introduce Pluto as a planet. But there is also some amount of doubts. For example, for some people reading from and making markings on the actual paper version is much more beneficial than reading only electronic copies.

One particularly interesting trend in field of educational technologies is gamification. In short (more detailed explanation in the next chapter), gamification means using game-like elements in applications that are not games. Few of the most prominent learning applications and platforms online, such as Duolingo and Khan Academy, have been incorporating gamification in their services for years now. Are these game-like elements only for fun or do they really help people to learn better?

This leads to this thesis. Is digitalization improving the learning results? Or making teachers and other faculty member's lives easier? Can it replace the good old pen and paper? Is the current generation of students smarter and more receptive for ever increasing information flow? Can learning be turned into a game? Or are the new systems and platforms only nuisance and drawing attention away from the actual learning? Is the current generation ruined and was everything better during the old days? While my focus is in gamification, hopefully I can find answers to at least some of the questions presented.

1.1 Research objectives and research questions

The goal of this research is to find out the following three things. First, what are the benefits of gamification in teaching? Second, how different applications and platforms are utilizing gamification elements? And third, are teachers using these applications and platforms to their benefit? In this paper, I will discuss about what gamification actually is and how it is defined.

I will introduce few of the most popular applications that use gamification elements. I will also link motivational theory to teaching and present the findings of my teacher survey. I have decided to scope my research to teaching of languages and therefore I have examined the theories that are linked to language acquisition and learning for the support of my study.

1.2 Defining Gamification

Nowadays gamification can be found almost everywhere. Your fitness tracker gives you achievements and notifies your friends when you surpass set goals, Goodreads give you badges and tracks your progress when you take part in reading challenges, FoursquareSwarm let's user compete with their friends based on the places they go. There are time management applications, such as Habitica, that are basically games that you play with your own life. And then, of course, the main focus of this thesis, learning applications, such as Duolingo, that use gamification elements to motivate and engage users to study and learn more.

First, we need to define, what gamification actually is. Origins of this term lay in early 2000s when English programmer Nick Pelling used it for the first time. Term then gained general popularity in 2010 when American professor and game designer Jesse Schell used it in DICE conference in Las Vegas (Prontera, 2017).

Founder and director of the Gamification Research Network and researcher at the University of York, Sebastian Deterding describes that "gamification is the use of game design elements in nongame contexts" (Deterding *et al.*, 2011; Figueroa Flores, 2015; Prontera, 2017) However, Finnish researcher Juho Hamari argues that gamification can also mean "A process of providing affordances for gameful experiences which support the customers' overall value creation" (Huotari and Hamari, 2012). According to Hamari (2015) the main difference between these two definitions is the point where

gamification actually happens. Whereas Deterding et al. (2011) argue that gamefulness of gamification is realized in the system design, Hamari and Huotari (2012) propose that it is more about the psychological aspect and the consequences that emerge from using the gamified system.

Hamari (2015) also revisits the conceptual definition into "gamification at its core, refers to system design that aims to promote the self-purposefulness/hedonism of an activity or system in order to promote exogenous (beneficial) goals." In other words, gamification can be used to make dull and mundane tasks more interesting and engaging for the user. Gamification can also be used to offer better and more visible sense of progress when they can compare where they are currently standing with their intended goals. This is the basis on which this paper leans on.

Gamification does not need to be restricted solely in digital environments. One professor in University of Indiana, Lee Sheldon, revamped the whole grading system in one of his classes. Instead of normal system, he turned the whole class into a game. Every student participating in the course chooses and names their avatars, and later they are organized into guilds. Students, or players, gain experience points from each assignment (crafting), presentation (completing quests) and quizzes (fighting monsters) completed. The points then accumulate and determine students final grade, or how high level his / her avatar is. (Sheldon, 2010)

1.3 Structure of the research

This thesis is structured in the following way: the first section is introductory section, where I will explain my motivation for the research, research objectives and questions and defining briefly what gamification is. Second section lays out the theoretical framework in which this thesis is done and explains gamification and its elements in more detail. In second section gamification elements and theories are connected together and variety of learning applications and platforms which are utilizing gamification are introduced. Third section explains the methodology used in this thesis. In section four I will present the results of the survey. Fifth section is dedicated for discussion, while the sixth, and final, section consists of conclusions.

2 Theoretical background

In this section I will introduce the main theories I have leaned on during this study. Since gamification as an academic topic of study is still very young, there aren't many established theoretical frameworks regarding the issue. There are also some clear differences on how gamification should actually be defined, as discussed above. In this section I will also describe the main elements of gamification and discuss how these elements are used. To conclude this section I will introduce the most well-known learning applications.

2.1 Theories

Since to main focus of this study is linked to teaching of languages, I looked into theories that are linked to language acquisition and learning. I chose four theories after Susan Malone's (2012) research on theories that apply for second language acquisition: Behaviorism, Universal Grammar (UG), Information Processing (Adaptive Control of Thought-model) and Social Interaction and Sociocultural Theories (Malone, 2012; Figueroa Flores, 2015). I have also included Felder-Silverman Model (Felder and Silverman, 1988) to represent difficulties when meeting with different learning styles.

It should also be noted that during the past few decades over 70 learning style theories have been developed (Coffield *et al.*, 2004; May Truong, 2015). Learning altogether is facing huge changes and it cannot be said for certain if they should be seen as opportunities of threats. The following theories serve as foundation for this paper.

Behaviorism theories assume that all behaviors are consequences of individual experiences or responses to stimulus in the environment. It is sometimes abbreviated into SRR (Stimulus, Response and Reinforcement). To go into more detail, Skinner (1963) introduced his Operant Conditioning-theory, which is applied into teaching by, for example, rewarding for good results and finishing up the designated assignments while punishing for undesired behavior such as disturbing the classroom or always missing the deadlines. This could also be translated as getting sufficient feedback on your actions.

Universal Grammar was first proposed by American linguist and philosopher, Noah Chomsky in the 1960s. Chomsky (1965) argues that Universal Grammar with the help of hypothetical module in human mind, Language Acquisition Device (LAD), is a sort of

instinctive an innate mental capacity which helps individuals, especially children, to learn language not by mimicking but by creating it. Universal Grammar clashes with SRR-paradigm of behaviorism. While Universal Grammar doesn't take a stand on acquiring additional languages, but instead focuses on learning native language, it still should be considered.

Adaptive Control of Thought-model (Anderson, 2013) was created by J. R. Anderson in the 1983 and is currently on its sixth version. The ACT-model argues that "intelligence is simply the gathering together and fine-tuning of many small units of knowledge that in total produce complex thinking" (Malone, 2012a). In teaching of languages, it can be translated into learning and storing the basics of grammar into long-term memory and then purposefully building vocabulary and exceptions on top of the good foundation.

Interaction and Sociocultural Theories take the role of surrounding social environment and interaction into account when learning new languages. Group of linguists argue the importance of conversational interactions and learners realization of a ""gap", a difference between their knowledge and what they want to / need to say" (Swain, 1990, as cited in Malone, 2012).

In the context of e-learning, Felder-Silverman model has been recognized as the most popular theory (May Truong, 2015). The model differentiates learning through four dimensions: Sensing / Intuitive (how to take in information), Visual / Verbal (how information should be presented), Active / Reflective (how information is processed) and Sequential / Global (how to organize information and progress toward understanding). The model takes different learners well into consideration and can be used as basis when differentiating learning platforms for different users (Felder and Silverman, 1988).

2.2 Gamification and its elements

In this chapter I will introduce some of the most common elements that appear in gamified systems. All of these are rather basic elements in gaming world and are used in order to create game-like feeling in other applications. However, at this point it should be noted that gamification and game-based learning are not the same thing. As explained in the first section, gamification can be defined as "usage of game design elements in nongame contexts" (Deterding *et al.*, 2011) as well as Hamari's (2015) description of the gamification as the system design, which aims to promote self-

purposeful actions in order to achieve beneficial goals. At the same time, game-based learning means basically that game's in question whole purpose is to educate. Al-azawi, Al-faliti and Al-blushi (2016) simplify the differences into explaining that while gamification turns the learning process as a whole into a game, game-based learning uses the game as part of the learning process and as a way to enhance it.

While this review is made with the scope in education and language learning, all the elements introduced below can basically be implemented into different fields of practice.

Avatars:

Avatar is the visual representation of user's alter ego. Often users can use virtual currency earned from various tasks to purchase different items, clothes etc. to differentiate from other users and to show own style. Usage of avatar can help in creating a feel of ownership in the gamified task ("it really is me hurdling through assignments!").

Badges:

All through the ages there has been different kind of rewards when tasks are completed well and efficiently. In school system students have seen their rewards in grades, scholarships, Dean's list awards and so forth. Most of the digital learning applications have integrated some kind of reward or badge system that helps users to showcase their achievements and learnings. For example, Duolingo awards its users for continuous use, exceeding daily goals and also shows your current overall progress level in user's home page. Users can then export these achievements to example to LinkedIn where it strengthens user's claims of proficiency in languages they have listed. As Shields and Chung (2017) claim, "Digital badges are quickly becoming an appropriate, easy and efficient way for educators, community groups and other professional organizations, to exhibit and reward participants for skills obtained in professional development or formal and informal learning".

Leaderboards & Social Elements:

Leaderboards and social elements go well hand in hand. When users have friends, who are also using same application, they can compete against each other and draw motivation from seeing how everyone is ranked in the leaderboard. They can also recognize their "competitors" and compare their performance (Cheong, Flilippou and Cheong, 2014).

Points and virtual currency:
One of the most common game-like elements implemented is some kind of point system, where you gain virtual currency based on your activities. Users can then use this currency to buy power-ups or bonus skills, such as getting a free pass for one day of inactivity, that aren't possible to obtain otherwise. Gaining points might encourage to an additional commitment when users are seeing how close they are, for example, of obtaining the next power-up.

Progress bar and instant feedback:
When playing games, and especially when learning anything, the sense of progress serves as a great motivator and increases the level of engagement (Figueroa Flores, 2015). Visualizing progress gives users a great idea what they need to do in order to get into the next level or how far they are from achieving their set goals (Huotari and Hamari, 2012). Instant feedback, in conjunction with progress bar, creates a feeling of flow and a clear goal.

2.3 Gamification elements and learning

Out of the five learning theories introduced earlier, behaviorism, Interaction and Sociocultural theories and Felder-Silverman model (1988) are the most practical and usable in the context of gamification. For example, we can draw similarities between Operant Conditioning-theory (Skinner, 1963) and getting badges for good scores and losing points because of inactivity. The way that the applications encourage users to continuous activity and improving their results, are clear baits of responding to an external stimuli. On the other hand, the social elements, such as leaderboards and fast-paced responding, and interaction elements, like speaking challenges, can be linked to Interaction and sociocultural theories by pushing learners to metalinguistic, thinking about language, activities (Gass and Selinker, 2008). In conjunction with instant feedback on, for example learner's pronunciation problems, it is possible to increase learner's awareness of how the language works and improve their learning.

The findings and ideas of Felder-Silverman model can be applied to gamification by using different kind of methods to present and organize information. The different applications, which are introduced in the next chapter, may use game-like environment, such as Quizlet's Gravity, where you need to type the correct translation

for the word within an asteroid before it hits your planet, or video lectures to feed the information to the learners. Progress bar can be seen as a way to organize and present your progression within the course while setting a clear goal of understanding at the same time.

Behaviorism
Encourages long-lasting engagement through rewards (badges, points, clear progress) while punishing for inactivity (losing health / points, falling back to previous levels). Instant feedback creates feeling of engagement.

Interaction and Sociocultural theories
Utilizes different methods of interaction through writing, speaking and listening assigments, leaderboards and social elements. Metalinguistics.

Felder-Silverman model
Utilizes videos, game-like environments, progress bars, different assignment types and offers possibilitys to listen and speak sentences in order to fulfill different learning dimensions.

Table 1: Framework

2.4 Applications and platforms

There are ever growing plethora of different learning applications focused on language learning. Most of them work both as web based platform as well as stand-alone application. It should also be noted that not all of them use elements of gamification. This chapter focuses on introducing the most proficient and well-known of them.

Anki:
Anki is a flashcard program that is based on spaced repetition learning technique. Anki incorporated technique in such way that after user has answered the questions asked, user tells the program how difficult answering was and Anki then re-schedules questions accordingly. Users create their own decks of cards (for example, vocabulary) and the decks are then synchronized in such way that users can access them with different devices. Users can also share decks with their friends. Anki has mobile as well

as web client versions. Even though Anki doesn't take advantage of gamification, it does create statistics of your performance and is very popular amongst language learners.

Babbel:
Babbel is a language learning platform / app that currently offers 14 different languages to learn and it has a wide range of different courses. It is one of the two subscription-based services on this list. Babbel is widely recognized and it has gained a lot of acclaim in media. Babbel hardly incorporates gamification elements, but they do have a point system that serves as a progress bar. Babbel also encourages social aspects of learning.

Duolingo:
Like Babbel, Duolingo too is a language learning platform / app. At the moment, Duolingo is offering courses for English speakers in 31 different languages (including Klingon and High Valyrian) and they have courses in 28 different languages. Duolingo is operating on freemium-model and they are also offering an optional paid subscription. Duolingo is making use of many different gamification elements, such as badges, virtual currency and progress bars. Duolingo also has its own flashcard application, Tinycards.

Kahoot:
Kahoot is a quiz-platform that can be used basically anything that can be presented in a form of a multiple-choice quiz. Quizzes have a set time limit in which users need to give their answer. Points are then given on a basis of correct answer and speed. This challenges participants to think quickly. After each question a leaderboard is presented where players can follow their progress during the particular quiz. Kahoot is widely used in schools and it even has a feature through which teachers can assign homework.

Khan Academy:
Khan Academy is a web-based, non-profit, learning platform that offers courses in various different fields, such as mathematics, physics, chemistry, economics and programming. The courses include lots of video material as well. In terms of gamification, Khan Academy is on top of the game alongside with Duolingo. There are badges, progress bars, virtual currency and avatars. Use of Khan Academy is free but they are encouraging users to support them financially in order to keep it free. They are also offering a mobile app.

Quizlet:

Quizlet is a web- and mobile based learning application that utilizes flashcards and different games and tests. Like Anki, Quizlet also allows registered users to create their own study sets to support their own needs. Quizlet is free to use but they are offering Quizlet Plus-service that includes additional features. Like Kahoot, Quizlet too has a separate section for teachers where they can give out assignments and follow student's progression. Gamified features include leaderboards, social elements where learners can study with / compete against each other and progression tracking.

Speakly:

Similar to Babbel and Duolingo, Speakly is language-learning application / platform. Speakly is subscription-based, just like Babbel. They are currently offering courses for five different languages with additional five coming soon. Their gamification element relies mainly on smart and personalized progress bar and kind of level based structure, where you progress after certain amount of progress has been made.

There are some clear differences on how the different service providers approach gamification and how they use it to their advantage. Duolingo and Khan Academy are the clear forerunners in this area, while Babbel and Speakly are more focused on to the more traditional way of teaching. Below is a compilation (Table 1) of what different elements different applications use. It is also worth to note that in this group of services, everyone is offering a mobile application in addition to their online platforms.

Gamification element	Service provider						
	Anki	Babbel	Duolingo	Kahoot	Khan Academy	Quizlet	Speakly
Avatar					X		
Badges			X		X		
Leaderboards			X	X		X	
Points / VC		X	X	X	X		
Progress bar		X	X		X		X
Stand-alone application	X	X	X	X	X	X	X

Table 2: Comparison chart

3 Methodology

In this study I wanted to find out how teachers are currently using different digital applications and platforms in their teaching and if they even are aware of gamification. To do this, I conducted a survey that was spread by using snowball sampling (Goodman, 1961; Biernacki and Waldorf, 1981). Originally the survey was sent out to 12 teachers (language and other subjects, upper secondary degree teachers and higher education), who I know personally, who were then encouraged to forward the survey link to their colleagues.

The survey (Appendix 1) was conducted in Google Forms and its structure was the following: first part of the survey has two questions (are they familiar with the concept of gamification and have they used any learning applications to support their classes) is common for all the respondents. In the second question, I gave some examples of different application and platforms, in case of the teacher not knowing that (s)he is using a gamified application. After the first section survey divides into "adopters" and "non-adopters" and presents a different set of questions for both.

The following questions for the "adopters" focuses on what applications / platforms they have used, how they first tried them, how they are using them, what kind of added value they are getting and if they feel that applications / platforms are lacking something or if they are posing any threats.

For the "non-adopter" group questions were focusing on why they are not using learning applications / platforms and if they are seeing any benefits or threats with learning applications / platforms.

The final, demographics, section is common for both answer groups and asks the level of seniority and degree of teaching to find out if there are any differences between age of students and teachers. The respondents can also voice their other opinions regarding the digitalization of teaching. The results and demographics of the survey will be presented in the next section.

In addition to the survey, I looked for suitable literature, such as journals, research papers and books with the aim of finding relevant information and then creating a basis of understanding the subject through it.

4 Results

This section describes the results of the survey. The final number of respondents was 8. There were two mandatory questions, which both were in the first part. I will first go through the quantitative questions (Q1-Q3). After that I will present the results from the qualitative questions (Q4-Q11) and finally the demographics of the respondents (D1-D2). Regarding the demographics, comprehensive school means classes from first to ninth (1.-9.), secondary education refers to high school and vocational schools and higher education refers to universities and universities of the applied sciences. The survey also had a field for open commentary about digitalization of teaching. Because only the first two questions were mandatory, I will include the numbers of respondents (=N) in each of the questions I am going through.

4.1 Quantitative questions

The first question (Chart 1) inquired if the respondents are familiar with the concept of gamification. Out of the eight respondents (N = 8), five said that they are familiar with the concept while three was not. Three out of four (3/4) of the respondents who have been teaching for 1-3 years said that the concept is familiar while two out of three (2/3) of the teachers, who have been working for 10-19 years, are familiar with the concept.

Regarding the level of teaching, four out of six (4/6) of teachers, who are working in the comprehensive school are familiar with the concept and two out of four (2/4) of secondary school teachers know the concept. The lone teacher, who has both worked over 20 years and has experience from higher education, claimed not to be familiar with the concept at all.

The second question (Chart 2) inquired if the respondents have utilized different applications on platforms in their own teaching or encouraged their students to utilize them. In case of the teacher had not realized that they are using gamified applications, the question included examples of different service providers, such as Duolingo and Quizlet. All but one respondent answered “yes” (7/8) which indicates that the applications themselves are familiar and in use, but the teachers don’t always realize that they are using gamified applications or platforms. The lone respondent, who answered “no” (1/8), was the one who has the longest work history and also the only one who has taught in higher education institutions.

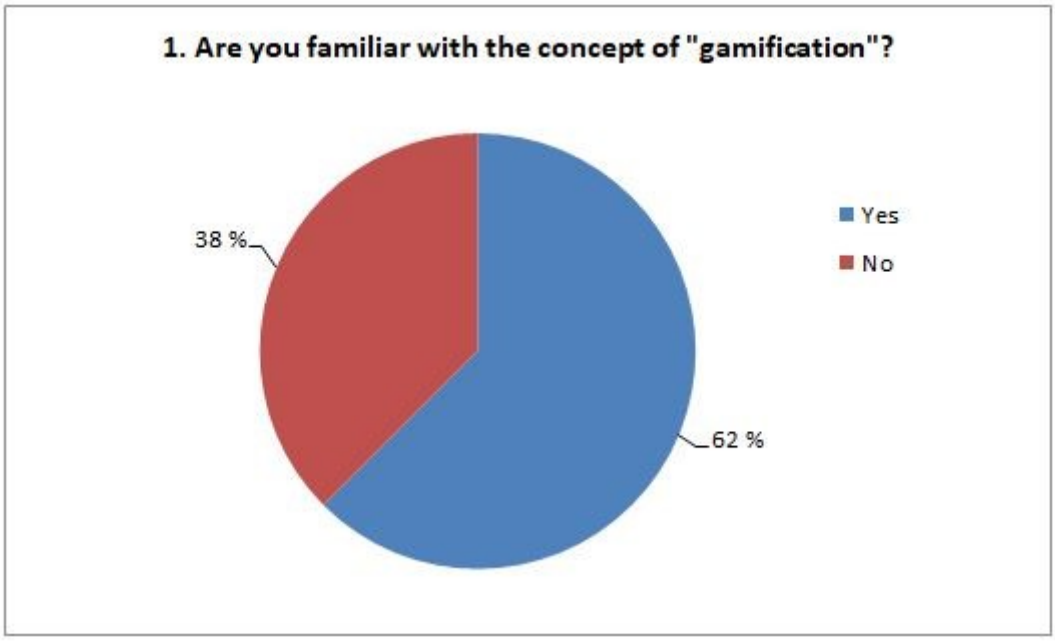

Chart 1: Familiarity of gamification

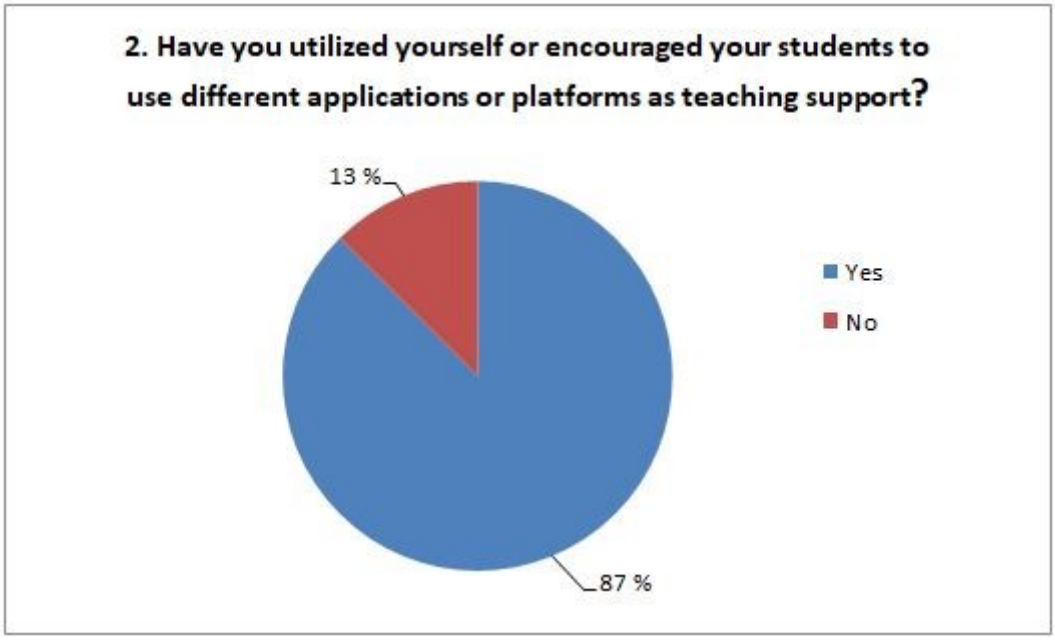

Chart 2: Utilization of applications

The third question is continuation of the second question and also starts the second

part of the survey. The second part is exclusive to the respondents who answered “yes” in the question 2 and therefore the number of respondents is 7 (N = 7). The respondents were asked to select the applications and platforms they have utilized and they are allowed to choose more than one. Question also included “Other, what?” field where the respondent could add different applications not mentioned in the question. All seven respondents indicated that they have utilized Quizlet. Next most popular was Duolingo followed by Kahoot. Both Babbel and Padlet, which was not mentioned in the question originally, had one vote.

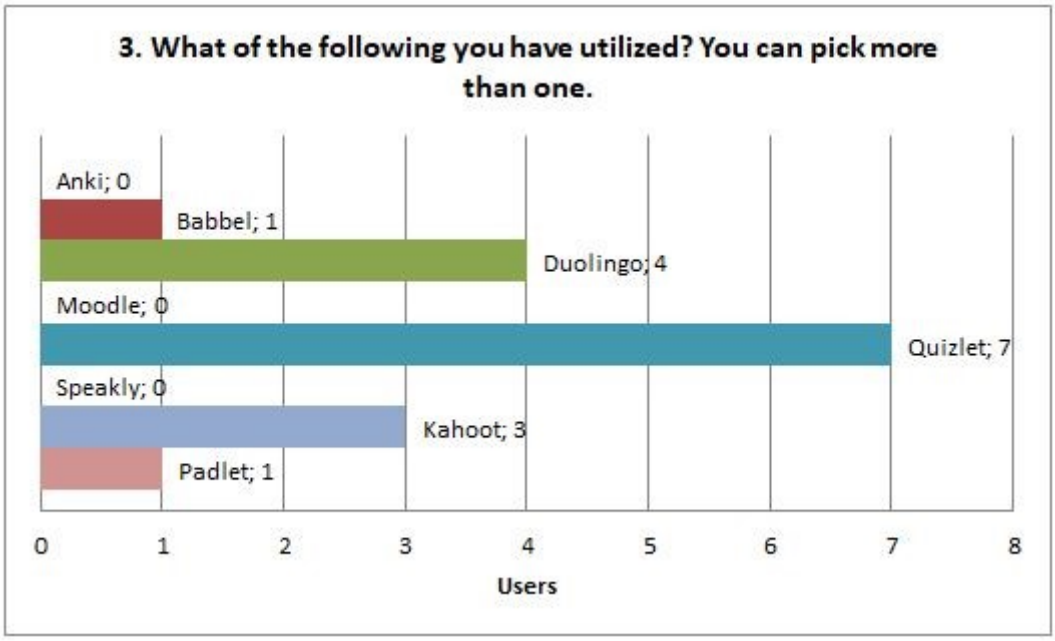

Chart 3: Usage of applications

4.2 Qualitative questions

The second part of the survey is divided into “adopters” and “non-adopters” and they have their own set of questions. All the questions are qualitative in nature and require open answers. Unfortunately, the only “non-adopter” respondent chose not to write anything so this part will focus only on the answers of “adopter”-group.

The first open question (Q4) inquires how the respondent came to use gamified applications. Half of the respondents discussed how they got recommendations from their colleagues while the other half explained how they wanted to find something that they can use to make lectures more interesting, fun and interactive.

Next question (Q5) was focused on how the teachers are utilizing the applications. Based on the answers, the strength of the applications seems to lay in how students can practice their vocabulary and grammar and do recaps of previous classes. One respondent emphasized how students can hear and see and how it boosts learning. One respondent brought up how publishers, in this case SanomaPro, has their own learning environment which works in conjunction with the actual textbooks. One respondent mentioned how (s)he encourages students to utilize Babbel and other functionalities of Quizlet for self-learning.

In question 6 (Q6) the respondents were asked to describe the observed benefits and added value that gamified applications and platforms bring. Here many of the respondents brought up some of the basic gamification elements, such as competing within the class, social aspects and instant feedback as beneficial to the teaching. Almost all respondents also brought up the "fun factor". Since the gamified applications are more interactive, the respondents felt that the students seem to be more engaged to the class when using Kahoot or Quizlet instead of textbooks.

Question 7 (Q7) inquires whether the teachers have encountered flaws or if they are missing any key features. There were not any major gripes but three respondents mentioned technical issues, such as requirement for internet connection or smart device. Also, while usability of the applications is pretty good, one teacher mentioned that creating own assignments is made a bit too difficult since it requires signing up. While this problem mainly affects younger students, it is still something to consider. Two respondents admitted that their own knowledge is not as good as it could be, meaning that they feel that they are not able to use the full potential of the applications. The biggest take away was that since vast majority of the assignments are created by the teachers, it is still very much up to them how well the applications can be utilized.

Question 8 (Q8) was last question of this part and it was the possible threats and risks the teachers have identified when utilizing applications. There were some notes about how applications increase student's "screen time". Once again, this problem is present mainly when dealing with younger students but teachers still need to consider this when planning their classes. While it is up to the teachers, how much they utilize application, there is a minor concern that if the teachers are pressurized to use more technology in the classes, it might not always be the best and most appropriate way to teach certain topics. If teacher decides to use applications or platforms, it should not be one time experiment, since it also takes time from the students to learn the new system.

As mentioned earlier, the lone “non-adopter” did not answer to this part of the survey. Questions were:

Q9: “Why you are not utilizing applications in your teaching (does not support own teaching style, don’t see the benefits, lack of functionalities etc.)?”

Q10: “Do you see any benefits in learning applications and –platforms?”

Q11: “Do you see any threats or risks in utilizing learning application and –platforms?”

The final part of the survey was open feedback about the on-going digitalization of schoolwork. The same concerns were brought up as in Q8; it could bring lots of good but it should not be the intrinsic value. Students still require supervision and guidance and there is a small risk that students are not always doing what they should be doing, when working with smart devices. Devices and applications are not substitutes for internal motivation but they can offer more tools to nourish it. The atmosphere and working culture of the school should be considered as major factors. One of the respondents described how his / her current workplace is very open-minded and encourages teachers to utilize different educational technologies, applications and platforms included whereas in his / her former school the attitude towards digitalization was not as positive.

4.3 Demographical questions

The survey had two questions focused on demographics of the respondents. This final part of the survey was common for both the “adopters” and “non-adopters” group. Questions were not mandatory but all eight respondents answered, therefore N = 8. The first (Chart 4) inquired their seniority or how long they have worked as a teacher. Half of the respondents (4/8) have worked 1-3 years. Three of the respondents had 10 to 19 years of experience and one had over 20 years on experience.

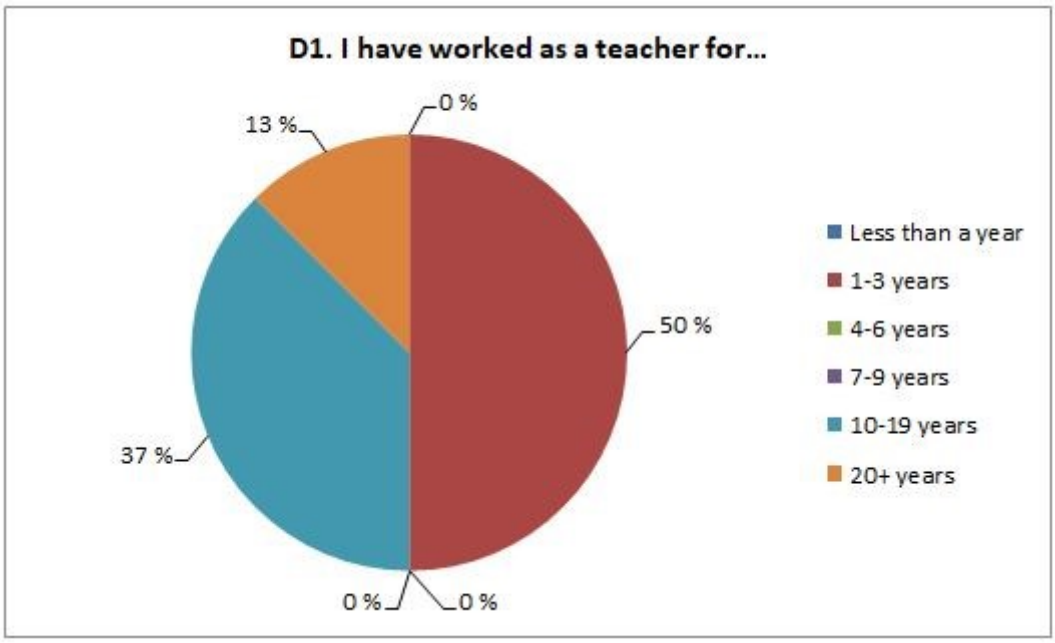

Chart 4: Level of seniority

The second question (Chart 5) was focused on the level of education. He respondents were given opportunity to choose multiple answers, since they might have or are currently teaching multiple different classes. All the respondents answered which means that the maximum here is eight. Out of all the respondents, 6 are or have been working in comprehensive school, three in institutions of secondary education and only one in higher education.

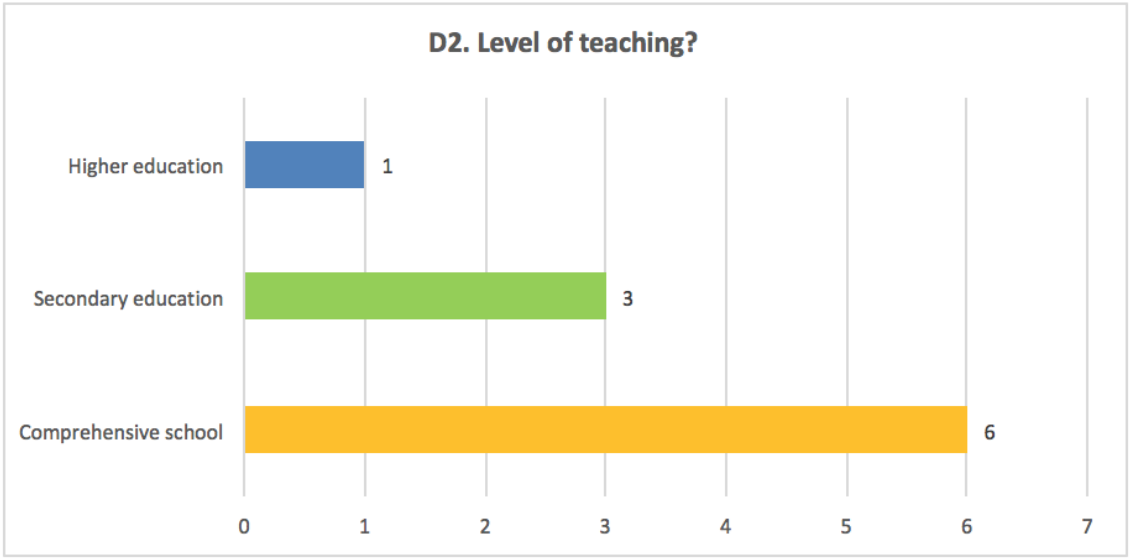

Chart 5: Level of teaching

5 Discussions

This section summarizes the results of the survey and discusses possible future research.

5.1 Implications to research

According to the survey, gamification seems to be somewhat familiar concept, at least within the respondents. Even thought, the concept itself isn't familiar to all, vast majority of the respondents are using gamified applications. It could be argued that teachers should be educated more about the possibilities.

Out of the gamified features, leaderboards and competing against class peers, instant feedback and the social elements were seen as most valuable. The multisensory approach was also seen very beneficial, just as (Felder and Silverman, 1988) have argued, since it supports both different student's different ways of learning, but also when student is exposed to multiple different sensory stimulus, they seem to learn better.

According to a study made in Spain in 2016, only a small percentage of teachers (11,30%) are using gamification on a regular basis but their attitudes seemed to be positive towards gamification (Martí-Parreño, Seguí-Mas and Seguí-Mas, 2016). The same research also showed no differences by age or gender. Results from this survey are similar with the exception that Finnish teacher's (at least this sample) adoption rate is much higher (87% vs, 11,3%). Martí-Parreño, Seguí-Mas and Seguí-Mas (2016) research was also focused on teachers in higher education, which could have affected the results.

5.2 Implications to practice

In the more practical level there are few things to consider. First of all, while the teachers seemed to have a positive attitude towards gamified applications and platforms, they still need to work in order to upkeep student's motivation. There was a note from one respondent that applications work better when student is already motivated but it usually is not enough to get unmotivated student excited about the subject. This might lead problems when working independently in class. For example, while others are doing assignments in Duolingo, the uninterested one might just surf

the web because it is “allowed” to have your smart device or computer in use. Teachers are not able to supervise everyone’s screens. It seems that the motivational part is still problem to be solved for the teachers.

There are some worries about teacher’s own competence in IT- and technological matters. Status review of Comprehensive school digitalisation (Kaarakainen *et al.*, 2017) recommends that teachers should get enough training and the attitude towards schools digital organizational culture should be followed closely. These are very positive signals regarding the worries that were mentioned in the survey as long as technologies are not pushed into fields that does not benefit from them.

While many of the applications have progress bar as their feature, and teachers can track the progress of different individuals through teacher’s workspace, it still could be beneficial to include more analytics into the equation. In order to reap the full benefits of digitalization of the schoolwork, government could look into developing learning applications which are customized for Finnish school system (and different subjects) and which would then become a standard in our schools. This would of course require more training for the teachers but it could be a great way to create more parity between schools.

5.3 Limitations and future research

There are some limitations within this study. First, the sample size (N = 8) was very small. Therefore, the results cannot be extrapolated to represent the whole teacher body in Finland. That leads us to the second point, the study was done in Finland, which means that it does not necessarily represent what is happening in other countries. The survey itself could be much more comprehensive and be expanded to consider other teachers, and not only language teachers, as well. Possible future research could also make a deeper look into whether there are differences between gender of the teacher or for example size of the school. One interesting concept for future research is the use of artificial intelligence in teaching. The applications and platforms already give instant feedback and can adopt and modify its question patterns according to learner’s success and behaviour.

On a more practical level, future studies could focus into finding out if the applications are improving results and if they should be incorporated more in teaching. According to the survey, some publishers are already connecting their own learning environments

and their textbooks, and this could be a very interesting trend.

6 Conclusions

In the beginning of this paper I wanted to learn about three things: First, what are the benefits of gamification in teaching? Second, how different applications and platforms are utilizing gamification elements? And third, are teachers using these applications and platforms to their benefit?

This report has shed some light into all three issues. Gamified applications bring more fun to the classroom and gives more and different stimulus to their learning process. The utilization of different gamification elements varies quite a bit. While some service providers are utilizing nearly everything one could imagine, others are relying on tracking users progress. And finally, teachers are using gamified applications quite a lot and are seeing benefits in using them.

As mentioned in the Introduction-section, it could be thought that everything digital is actually drawing the attention away from the actual learning. It has been discussed that children who have been living with mobile devices for all their lives have shorter attention spans and it is becoming more and more difficult to concentrate**.** Based on that thought, it could also be argued that that teaching of perseverance is the actual key. Teachers, who are de facto responsible in increasing motivation and creating a favorable learning environment, where students are able to use their own strengths and utilize the best methods for them, like described in Felder-Silverman Model (Felder and Silverman, 1988). It can be argued that teachers should use all the tools that they have in their possession, if it would mean better results and better educated students. After all, digitalized applications, such as Khan Academy or Duolingo can be used to support different learning styles. Or is gamification only a magic trick that makes students forget that Swedish grammar is hard and has five different declensions and just learn how to use them?

There are some evidence that gamification elements, such as badges and social aspects, contributes positively to learning experience (Figueroa Flores, 2015; Shields and Chugh, 2017). But maybe it is because the teachers have been able to recognize the right tools to nourish motivation.

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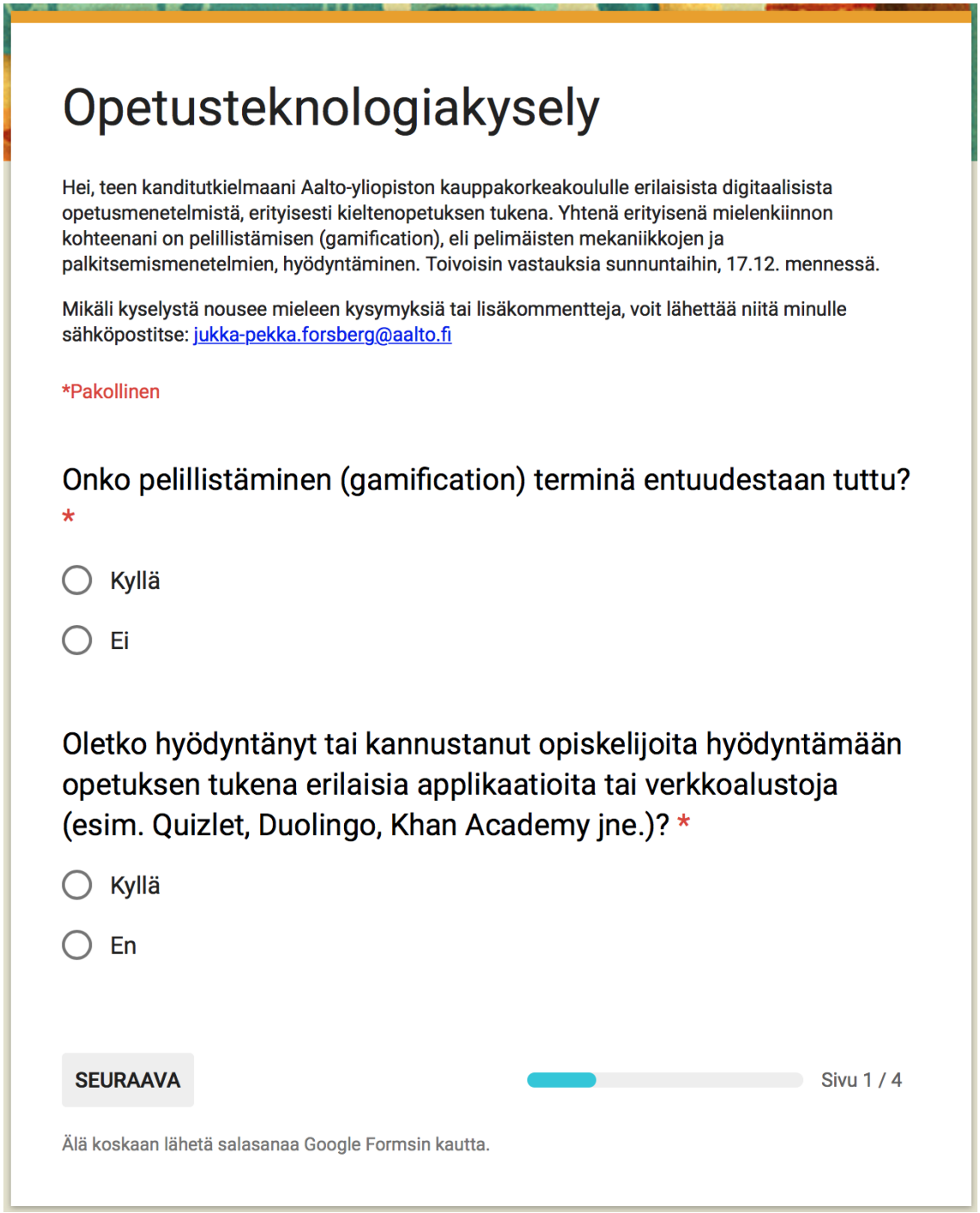
7 Appendices

7.1 Appendix 1: The Survey



Opetusteknologiakysely

Hei, teen kanditutkielmaani Aalto-yliopiston kauppakorkeakoululle erilaisista digitaalisista opetusmenetelmistä, erityisesti kieltenopetuksen tukena. Yhtenä erityisenä mielenkiinnon kohteenani on pelillistämisen (gamification), eli pelimäisten mekaniikkojen ja palkitsemismenetelmien, hyödyntäminen. Toivoisin vastauksia sunnuntaihin, 17.12. mennessä.

Mikäli kyselystä nousee mieleen kysymyksiä tai lisäkommentteja, voit lähettää niitä minulle sähköpostitse: jukka-pekka.forsberg@aalto.fi

*Pakollinen

Onko pelillistäminen (gamification) terminä entuudestaan tuttu? *

Kyllä

Ei

Oletko hyödyntänyt tai kannustanut opiskelijoita hyödyntämään opetuksen tukena erilaisia applikaatioita tai verkkoalustoja (esim. Quizlet, Duolingo, Khan Academy jne.)? *

Kyllä

En

SEURAAVA

Sivu 1 / 4

Älä koskaan lähetä salasanaa Google Formsin kautta.

Mitä seuraavista olet hyödyntänyt? Voit valita useamman.

- [ ] Anki
- [ ] Babbel
- [ ] Duolingo
- [ ] Moodle
- [ ] Quizlet
- [ ] Speakly
- [ ] Muu: _____

Mikä sai alunperin kokeilemaan näitä applikaatioita tai alustoja?

Oma vastauksesi

Hyödynnätkö edellä mainittuja vain jossain tietyssä harjoitustyypissä, vai mahdollisimman monipuolisesti?

Oma vastauksesi

Millaisia hyötyjä tai lisäarvoa koet applikaatioiden ja alustojen tuovan opetukseen (esim. stimuloiko eri tavalla, tukeeko erilaisia oppimistyylejä, onko oppiminen hauskempaa jne.)? Vastaa mahdollisimman kattavasti.

Oma vastauksesi

Onko hyödyntämissäsi applikaatioissa tai alustoissa mielestäsi joitakin selkeitä puutteita?

Oma vastauksesi

Näetkö mitään uhkia opetusapplikaatioiden ja -alustojen käytössä?

Oma vastauksesi

TAKAISIN SEURAAVA Sivu 2 / 4

Älä koskaan lähetä salasanaa Google Formsin kautta.

Mistä syystä et käytä applikaatioita tai alustoja opetuksessa (ei tue omaa opetustapaa, ei koettuja hyötyjä, puutteita toimivuudessa tms.)?

Oma vastauksesi

Näetkö opetusapplikaatioiden ja -alustojen käytössä mitään hyötyjä?

Oma vastauksesi

Millaisia uhkia näet opetusapplikaatioiden ja -alustojen käytössä?

Oma vastauksesi

TAKAISIN SEURAAVA Sivu 3 / 4

Älä koskaan lähetä salasanaa Google Formsin kautta.

Anna vielä joitakin perustietoja itsestäsi.

Olen toiminut opettajana

- ○ Alle vuoden
- ○ 1-3 vuotta
- ○ 4-6 vuotta
- ○ 7-9 vuotta
- ○ 10-19 vuotta
- ○ 20+ vuotta

Opetusaste

- ☐ Perusaste
- ☐ Toinen aste
- ☐ Korkeakoulut
- ☐ Muu: _____

Muuta kommentoitavaa opetuksen digitalisoitumisesta?

Oma vastauksesi

TAKAISIN LATAA Sivu 4 / 4

Älä koskaan lähetä salasanaa Google Formsin kautta.